Peaceful Nuclear Cooperation

U.S. Support for NPT Article IV

UNITED STATES & SOUTH AFRICA

Through the International Atomic Energy Agency (IAEA), the United States contributes to the work of many countries using nuclear materials and technology for peaceful purposes. In recent years, U.S. support has focused on achieving tangible and lasting benefits in fields that are vital to human development, including agriculture, human health, water resource management, and human resource development. Since 2000, the IAEA has approved and funded $6,653,352, including $343,386 in 2013, under its Technical Cooperation (TC) program for projects in South Africa.

The United States views its support for the peaceful uses of nuclear energy as a critical part of its efforts to strengthen the IAEA and the global nuclear nonproliferation regime. About 25% of the IAEA's annual budget for peaceful nuclear assistance comes from the U.S. In 2012, the U.S. contributed almost $22 million to the Technical Cooperation Fund and over $6 million in additional funding for training, fellowships, and cost-free experts.

In addition to these longstanding contributions to the IAEA's peaceful uses programs, at the 2010 NPT Review Conference, the U.S. announced a $100 million Initiative to further expand this support over the next five years. The U.S. pledged $50 million towards the IAEA's Peaceful Uses Initiative (PUI), focusing on human health, food security, water resource management, and nuclear power infrastructure development. The U.S. has already allocated over $27 million to specific PUI projects, and welcomes the contributions of Japan, the Republic of Korea, New Zealand, the Czech Republic, Hungary, Sweden, Australia, France, Indonesia, Brazil, Italy, the UK and Kazakhstan to this important Initiative.

NUCLEAR ENERGY

The need for electricity, economic competiveness and environmental considerations have increasingly led a large number of Member States to consider nuclear power as an energy development option and seek assistance from the IAEA. South Africa is currently participating in a regional TC project sponsored by the U.S. to increase awareness of the requirements and challenges related to the feasibility of nuclear power programs. The project addresses regional priorities and concerns related to nuclear energy, including the requirements for conducting comprehensive studies to explore the feasibility of nuclear power, developing nuclear safety frameworks, and promoting regional cooperation and common understanding about major nuclear power issues, such as nuclear material, radioactive waste management, legal and safety obligations, human and financial resources, and reliable technologies.

NUCLEAR SAFETY

The use of nuclear technology has great potential to help shape the future of developing countries, but is not without some risk. In recognition of this, South Africa recently participated in a regional TC project funded by the U.S. to strengthen national regulatory infrastructures for the control of radiation sources. South Africa currently participates in another regional TC project, also funded by the United States to maintain these regulatory infrastructures and enhance their effectiveness and sustainability.

Self-assessment and regional networking can also significantly contribute to strengthening national regulatory infrastructures, so South Africa is currently participating in a regional TC project sponsored by the U.S. to improve the performance of regulatory systems and conform to the requirements of international standards through self-assessment and enhanced regional cooperation.

RADIATION PROTECTION

Through additional U.S.-supported regional TC projects, South Africa is also currently working to strengthen

1. *International radiation measurement exercise. Credit: Dean Calma/IAEA*
2. *Nuclear power plant. Credit: Petr Pavlicek/ IAEA*
3. *IAEA to increase access to radiotherapy and nuclear medicine in developing countries. Credit: Dana Sacchetti/IAEA*

occupational radiation protection, radiation protection of patients during medical exposure, as well as control of public exposures.

Furthermore, disused facilities and sites contaminated because of activities involving the use of radioactive material pose continuing health risks to adjacent communities and, potentially, to the wider public. South Africa is currently participating in an interregional TC project sponsored by the U.S. to strengthen the efficient clean-up of radioactive contaminated facilities and sites.

EMERGENCY MANAGEMENT

Radiation emergencies not only risk injury to individuals, but can also contaminate large territories and affect the living conditions of communities.

South Africa is currently participating in a regional TC project supported by the U.S. to strengthen participating countries' national arrangements for response to radiological and nuclear emergencies and improve their compliance with international standards.

HUMAN HEALTH

While radiotherapy is a well-known nuclear technology used for cancer treatment, the lack of adequate human resources in many centers in the African region negatively affects the accessibility and quality of care available for cancer patients. South Africa is currently participating in a regional TC project sponsored by the United States to determine the number of professionals working in each country, assess and improve existing training programs, and establish training programs in countries where they don't exist.

HUMAN RESOURCES

To contribute to Member States' manpower development, the IAEA awards individual fellowships and organizes group training courses. Every year, numerous fellows and training course participants travel to the United States for training in various peaceful uses of nuclear technology and return to their home country to apply the lessons learned.

Since 2000, the U.S. has hosted multiple training courses that included South African participants in fields such as decommissioning, insect pest control, isotope hydrology, quality assurance in radiotherapy, environmental remediation, nuclear safety and security, and long-range nuclear energy strategies. Training was also provided through the IAEA Fellowship Program to 19 South Africans, three of which were sponsored by the United States, in fields including radiation protection, mass spectrometry and mass separators, power reactors, insect pest control, nuclear medicine imaging, micronutrients in nutrition, and ground-water hydrology. Additionally, since 2000, 53 U.S. experts have traveled to South Africa to collaborate through various IAEA Technical Cooperation projects. Examples of some topics include quality expansion, decommissioning, design and practical assessment, fruit flies, nuclear power, and monitoring activities.

International radiation measurement exercise. Credit: Dean Calma/IAEA

Through bilateral efforts, the United States has provided direct support to Member States through various collaborative projects such as the exchange of information, expert visits, and training of personnel.

Nuclear technology and materials require careful management by well-trained personnel. Countries with emerging nuclear programs often lack the human resources needed to design and implement their nuclear programs.

In 2005, the 1994 agreement between South Africa's National Nuclear Regulator (NNR) and U.S. Nuclear Regulatory Commission (NRC) for the exchange of technical information and cooperation on nuclear safety research was renewed for a five-year term.

Also, the International Nuclear Safeguards and Engagement Program (INSEP) has cooperated with South Africa through several events, including trainings, technology transfers, system upgrades, material measurements and equipment testing. INSEP engages Member States with sound plans to establish safety, security, and nonproliferation infrastructures that are necessary for a responsible civil nuclear energy power program.

In 2012, Department of Energy's National Nuclear Security Administration (DOE/NNSA) provided $687,000 in funding to South Africa.

Additionally, since 2000, six South African physicians have been certified in the U.S. through the American Board of Nuclear Medicine.